

A communication was received from Dr. John Locke, of Cincinnati, Ohio, on his "Gravity Escapement with Detached Detents," which was referred to a Committee, consisting of Mr. Downes, Prof. A. D. Bache, and Mr. Saxton.

Dr. Patterson laid before the Society specimens of two minerals from the diamond mines of Brazil, received through Mr. Ernest Pailhet, a merchant of Paris, now in Philadelphia, by whom they were first introduced into commerce.

One of these minerals occurs in irregular black lumps of considerable size, and is found in the diamond grounds one or two feet below the surface. It is considered a certain indication of the presence of diamonds, which, indeed, are sometimes found inside of its masses. Its structure is perfectly vitreous, and it appears to be a pure obsidian.

The other, called "Diamond Carbon," or "Black Diamond," is found in the same locality. It cuts all other minerals, including the diamond itself, upon which it acts with as much rapidity as the diamond dust. The specific gravity of the smaller piece is 3.01. These minerals first attracted attention at the diamond mines, about six years ago. The "Diamond Carbon" is sold here at 75 cents per carat of  $3\frac{1}{2}$  grains troy, being about 25 cents per grain, or about six times the value of gold.

Dr. P. conceives that the "Diamond Carbon" will be found exceedingly useful in the arts, being applicable to all purposes for which diamond dust is now used.

Pending nominations, Nos. 224 and 225, were read.

*Stated Meeting, September 15.*

Present, twenty members.

Dr. PATTERSON, Vice-President, in the Chair.

Lieut. J. Melville Gilliss, U.S.N., a recently elected member, was presented to the presiding officer and took his seat.

A letter was received and read:—

From Prince Metternich, dated Vienna, February, 1847, announcing a donation to the Society:—

From the Geological Society of London, dated Somerset House, 15th June, 1848; and from the Linnean Society, dated Soho Square, London, 22d June, 1848, acknowledging the receipt of Vol. X. Part I. of the Transactions, and Nos. 36 to 39 of the Proceedings of this Society:—

From the Holland Academy of Sciences, at Harlem, dated Harlem, 29th July, 1848, announcing a donation to this Society: and—

From the Honourable, the Secretary of the Navy, dated Washington, 30th August, 1848, on the subject of the proposed astronomical observations for the parallax of the planets Venus and Mars.

The following donations were announced:—

#### FOR THE LIBRARY.

Journal of the Royal Geographical Society of London. Vol. XVIII. Part I. 1848.—*From the Society.*

Proceedings of the Linnean Society of London. Nos. 30 to 34.

From June 2, 1846, to March 7, 1848.—*From the Society.*

Charter and By-Laws of the Linnean Society of London. 1848.—*From the same.*

Annals and Magazine of Natural History, including Zoology, Botany and Geology. Second Series. Vol. II. No. 7. July, 1848.—*From Sir William Jardine, Bart.*

Die Cephalopoden des Salzkammergutes, aus der Sammlung seiner Durchlaucht des Fürsten von Metternich. Ein Beitrag zur Palæontologie der Alpen. Von Franz Ritter von Hauer: Mit einem Vorworte von Wilhelm Haidinger.—*From Prince Metternich.*

Journal Asiatique. Tome X. No. 50, et Tome XI. Nos. 51 au 54. November, 1847, to May, 1848.—*From the Asiatic Society of Paris.*

Boston Journal of Natural History. Vol. V. No. 4.—*From the Boston Society of Natural History.*

Journal of the Franklin Institute. Third Series. Vol. XVI. No. 2. August, 1848.—*From the Institute.*

American Journal of Science and Arts. Conducted by Professors Silliman and Dana. Second Series. Vol. VIII. No. 17. Sept. 1848.—*From the Editors.*

Transactions of the Royal Irish Academy. Vol. XXI. Part 2.—  
*From the Royal Irish Academy.*

The African Repository and Colonial Journal. Vol. XXIV. No. 9.  
September, 1848.—*From the American Colonization Society.*

The Medical News and Library. Vol. VI. No. 69. Sept. 1848.—  
*From Lea & Blanchard.*

Summary of the Transactions of the College of Physicians of Philadelphia. From April 4 to August 1, 1848, inclusive.—*From the College of Physicians.*

The Committee (Profs. Booth, F. Bache, and Frazer,) upon Dr. Charles M. Wetherill's paper "On the Neutral Sulphate of the Oxide of Ethyl and the Products of its Decomposition," reported, recommending its publication in the Transactions of the Society, and the publication was ordered accordingly.

Although neutral sulphate of oxide of ethyl, the true sulphuric ether, has been sought for in vain, and doubtless often formed, Dr. W. has first succeeded in isolating it, and studying its properties. It is prepared by slowly passing the vapours of anhydrous sulphuric acid into pure ether, surrounded by ice and salt; agitating the mixture with 1 volume ether and 4 volumes water, separating the two strata of liquids, agitating the ether solution with milk of lime, washing with water, and distilling off the ether. The oily liquid in the retort is transferred to a capsule, washed with a little water, and dried in vacuo over oil of vitriol. The aqueous solution contains sulphurous, ethionic, and sulphovinic acid, and if the temperature were not kept low, it contains, in addition, isethionic and methionic acids.

When pure, the neutral sulphate is a colourless oily liquid, of a pungent taste and peppermint odour, sp. gr. 1.12; distils with great difficulty, even in an atmosphere of carbonic acid; the distillate is colourless, neutral, and heavier than water. Chlorine is dissolved by it in the cold, without decomposition, giving a green colour, and the oil is again precipitated by water. A solution of potassa, saturated with sulphuretted hydrogen, changes it into mercaptan and sulphate of potassa;  $C_4H_5O, SO_3 + KS, HS = C_4H_5S, HS + KO, SO_3$ . It is soluble, unaltered in fuming nitric acid, but by adding potassa and heating, nitrous ether is formed ( $C_4H_5O, NO_3$ ). Treated with muriatic acid and potassa, a heavy oil distils over, with an odour of apples. With water, the oil disappears entirely, leaving an acid solution. The carbon and hydrogen were determined by combus-

tion with oxide of copper, with chromate of lead, and with a mixture of oxide of copper and chlorate of potassa; the sulphuric acid by chloride of barium. The result was  $C_4 H_5 O, SO_3$ .

By the action of water, aided by heat, the oil entirely disappears, and if carbonate of baryta be added, and the filtered solution be evaporated, crystals of methionate of baryta separate, and the remainder of this salt is thrown down by alcohol. The methionate is proved by its properties and analysis. The mother liquor yields a salt, soluble in alcohol, which is shown to be an equal mixture of sulphovinate and isethionate of baryta, by analysis and behaviour. For sulphovinic acid is resolved, by boiling, into sulphuric acid and alcohol, while the latter is not. By determining the baryta in the mixture, boiling the acids, removing the free acid by carbonate of baryta, and determining the baryta in the last solution of isethionate, the weight of the former is about double that of the latter.

It follows, from these experiments, that the usual explanation of the formation of heavy oil of wine, previous to that of ethionic acid, is erroneous, for not the slightest trace of the heavy oil of wine is found in the substance resulting from the action of anhydrous sulphuric acid on ether or alcohol. The probable rationale is, that the anhydrous sulphuric acid partly forms directly the neutral sulphate of ether ( $C_4 H_5 O, SO_3$ ), and partly decomposes the ether, forming Regnault's sulphate of olefiant gas ( $4 SO_3, C_4 H_4$ ), which takes up 1 eq. water to form ethionic acid ( $4 SO_3, C_4 H_5 O$ ). Another portion of the acid takes up water and unites with ether, producing sulphovinic acid ( $C_4 H_5 O, 2 SO_3, HO$ ). In the case of alcohol, part of the sulphuric acid takes up water and unites with a portion of alcohol, forming hydrated sulphovinic acid, while the liberated ether partly forms the neutral sulphate and partly ethionic acid. The products of decomposition sufficiently distinguish the neutral sulphate from the heavy oil of wine. 4 eq. of the neutral sulphate with 3 eq. water, are first resolved into ethionic acid, and 3 eq. alcohol, and by the action of heat, into isethionic and sulphovinic acids and alcohol, as shown in the following equation.  $4 (C_4 H O, SO_3) + 3 HO = C_4 H_5 O, 4 SO_3 + 3 (C_4 H_5 O, HO) = C_4 H_5 O, 2 SO_3 + C_4 H_5 O, HO, 2 SO_3 + 2 (C_4 H_5 O, HO)$ .

Dr. F. Bache announced the death of Prof. J. J. Berzelius, at Stockholm, in the 69th year of his age.

Dr. Boyè exhibited to the Society a specimen of tea, artificially coloured, which had been handed to him for examination.

He was unable to detect any distinct colouring matter, and believes it to have been coloured by the dust of a superior kind of tea. The colour on the outside was a fine green, and exhibits a high lustre, but when this is scraped off, the colour in the inside is much darker. The colouring is done in China.

On motion of Prof. Frazer, Dr. Patterson, Mr. M'Culloh, and Prof. Kendall, were appointed a Committee, with power to confer with a Committee of the Academy of Arts and Sciences of Boston, and with Lieut. Gilliss, on the subjects referred to in the letter of the Secretary of the Navy, read this evening, and they were authorized to take such action upon the subject as they may deem expedient.

*Stated Meeting, October 6.*

Present, fifteen members.

DR. FRANKLIN BACHE, Vice-President, in the Chair.

A letter was received and read:—

From John M. Scott, Esq., dated Philadelphia, 15th September, 1848, resigning his membership in the Society, which resignation was accepted.

The following donations were announced:—

FOR THE LIBRARY.

Report of the Seventeenth Meeting of the British Association for the Advancement of Science, held at Oxford, in June, 1847.—*From the British Association.*

Annals and Magazine of Natural History, including, Zoology, Botany and Geology. Vol. II. Second Series. No. 8. August, 1848.—*From Sir William Jardine.*

Travaux de la Société d'Histoire Naturelle de l'Ile Maurice: du 6 Octobre, 1842, au 24 Aout, 1846.—*From the Natural History Society of Mauritius.*

Monograph of the Fossil Squalidæ of the United States. By Robert W. Gibbes, M.D., of Columbia, South Carolina.—*From the Author.*

Statistics of Coal. The Geographical and Geological Distribution of